M.A.R.S. Making Aerospace Real for Students

July-August 2004

News
AEROSPACE EDUCATION
Inspiring Students to Excel

IN THIS ISSUE

Topics of Interest

Aerospace Education News is the official bi-monthly publication of the Civil Air Patrol and is produced by the Leadership Development and Membership Services Directorate, CAP National Headquarters, Maxwell AFB, Alabama.

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If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@cap.gov.

COMING BACK STRONGER IN 2006!

NCASE
National Conference on Aviation and Space Education

We have great news! We are listening to our members, teachers, young people, partners, sponsors, and you in response to rebuilding the National Congress on Aviation and Space Education conference. First, we have a slight name change from National Congress to National Conference. We are growing and changing to reflect the current education initiatives as well as the new excitement about the space program. It is our commitment to bring NCASE to a level unsurpassed by any in the nation!

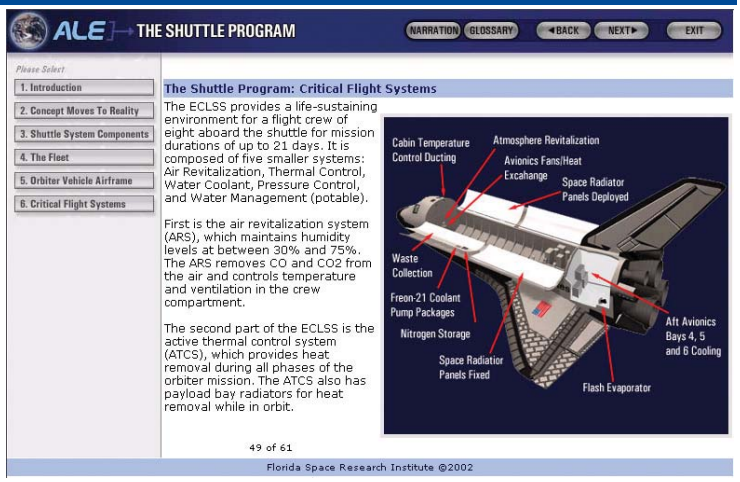
Many top education and aerospace leaders are working with CAP to help revamp this valuable conference to address the needs of educators and the Civil Air Patrol mission that is "...educating our citizens on the impact of aviation and space." Tony Fowler of the U.S. Department of Education said, "Science teachers have to meet so many requirements these days, including those of the No Child Left Behind Act. NCASE should be designed to emphasize the practical application of aerospace education to those requirements. This conference must help them develop ways to meet those demands without becoming bogged down in 'teaching to the test.' "

CAP's decision to update NCASE met with approval from some of aerospace education's most prominent figures, including legendary aviator A. Scott Crossfield. "NCASE has always been hosted by CAP and the U.S. Air Force, both of which are dealing with limited resources to support such a conference," Crossfield said. "There's a danger that the conference could be discontinued altogether, and we want to be sure that doesn't happen. Aerospace education is critical for our nation's children, and teachers want the best possible ways to incorporate aviation and space into their lessons. NCASE must focus on what today's teachers need to prepare their students for an increasingly high-tech world, and that means looking at the realities of today's classrooms, today's students and the emerging technologies that are affecting us all."

We look to each of you to join us for the National Conference in Washington DC in October 2006. NCASE is made possible by your time and efforts. If you have any suggestions and ideas, please feel free to contact Ms. Claudine Sayegh at Claudine.Sayegh@andrews.af.mil. More information will be posted to the CAP website when it becomes available and watch for press releases at **http://www.cap.gov/mediacenter/release.html.**

CAP Teams With FSRI for Space Exploration

From Left: CAP Executive Director Al Allenback, FSRI Executive Director Dr. Samuel Durrance, and CAP Deputy Director of Aerospace Education Judy Rice during a visit to FSRI at the Kennedy Space Center.



Screen Image from ALE Courseware

The Civil Air Patrol (CAP) has partnered with the Florida Space Research Institute (FSRI) to use a unique online education resource in support of the nation's new Moon-Mars space exploration vision. CAP National Headquarters has purchased nine annual memberships in FSRI's Advanced Learning Environment (ALE) for an initial trial to incorporate the ALE's cutting-edge online aerospace education modules into CAP's Aerospace Education offerings.

Co-funded by NASA, the ALE is a revolutionary web-based environment for aerospace education, providing highly-interactive, media-rich learning experiences for cadets, members, and educators. The ALE offers short, self-paced learning modules, synchronous web classes, collaboration tools, and community discussions. The ALE's entire Space Science curriculum is available to the Civil Air Patrol, encompassing more than 15 hours of media-rich, online education in such topics as Newton's Laws, Orbital Science, Living and Working in Space, Military Space Programs, and many more.

"FSRI is proud to partner with the Civil Air Patrol in this exciting time of renewed interest in space exploration," said FSRI Executive Director Dr. Samuel Durrance, a two-time shuttle astronaut. "We each have aerospace education missions and, working together, we can accomplish much more than each of us could accomplish separately."

FSRI has collaborated with CAP for some time, serving as an NCASE organizational sponsor and presenter, as well as working individually with local squadrons such as the Titusville, FL, squadron and the Sarasota Military Academy (SMA). Under the direction of Capt. Dick Petrucci (US Navy, Ret.), SMA purchased 27 individual ALE accounts for its students and, so far, the results have exceeded expectations.

"During the first week of classes this semester, I had students in our new aerospace sciences class bring me homework assignments that weren't due for another week," reflected Capt. Petrucci. "One student was bragging that now he knew his weight on Mars, adjusted for gravity. After one week of classes with 24 cadets, I have not seen one cadet off-task during the 80-minute periods and they are tearing up the course with great interest - all 'A's to date. They beat me into the classroom after morning formation and immediately go to work without a single word from me. I have to 'pry' them out of the computer lab at the end of the period. It is absolutely amazing."

Even squadrons not part of the National Headquarters ALE trial can participate. For less than $50 per year, an individual squadron can join the ALE and access all of its Space Science curricula. As a non-profit, FSRI only charges for its internal operational expenses. For details, refer to ***www.space-education.org*** or feel free to contact the ALE Program Manager, Tom Cavanagh at tcavanagh@fsri.org. Based at the Kennedy Space Center, FSRI was established by Florida's Governor and Legislature in 1999 to promote collaboration among academic institutions, industry and federal agencies to support aerospace-related education, training, research, and technology development.

AEO/AEM NEWS AND VIEWS

AEROSPACE EDUCATION FOUNDATION GRANTS

The Aerospace Education Foundation (AEF) is one of our very best partners. Like us, they believe in aerospace education and its importance to our country. Also, like us, they see the worth in promoting aerospace education, and one of the ways they do that is by providing grants to CAP units and schools. In fact, they have donated over $100,000 to CAP to help fund our aerospace programs.

AEF grants must be used for aerospace-related activities, videotapes, aerospace-oriented field trips or aerospace education days. The grants cannot be used for flying, flying instruction, honor guard or color guard activities or to buy uniforms. A grant request cannot exceed $250.

Our last grant cycle, a CAP unit cycle, ended on June 30th. Results of that cycle will be available soon. Our next cycle will be an educator grant cycle for our aerospace education members and school teachers. Applications are due to us before the deadline of September 30th. Please visit CAP's website and download the grant application and follow the directions.

One way for us to show our appreciation to AEF is by sending a follow-up report on how the grant was used.

We will send a form to the grant winners and ask that you take a couple of moments and complete the form. It really is the least we can do to thank AEF for their continued and outstanding support of CAP's aerospace education mission.

Here is a list of the Spring Educator Grant winners:

Lauren Allwein	Colorado
Kay Chawgo	Illinois
Betsy Christianson	Florida
Cindy Corlett	Colorado
Ann Gehring	Idaho
Tim Gomez	Colorado
Mary Gurley	Alabama
Charles Howlett	New York
Doug Keeling	Kentucky
Mark Leslie	Florida
Darlene Litteral	Kentucky
Roberto Maurera	Colorado
Marilyn McIntosh	Oklahoma
Sara Mills	Alabama
Jennifer Millsap	Texas
Monica Odoms	Maryland

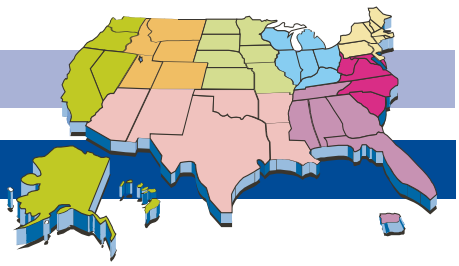
Yeager Tests and Specialty Track 215 On-line Tests

The on-line testing for both the 215 Aerospace Education Officer's specialty track and the Aerospace Education Achievement Award (also known as the "Yeager Award") has really hit big with our Civil Air Patrol membership! The on-line program started on 8 March, and so far, over 300 CAP members have taken the various 215 tests, and over 800 CAP members have taken the Yeager test. To put that into perspective, in all of 2002, there were 753 Yeager Awards bestowed. In three short months this year, we have 832 Yeager Awards—and that is just from the on-line test alone! If this trend continues, we could easily have a record-breaking year of over 2,000 Yeager Awards. This is a huge leap forward, and it reflects two points. First, there is a growing enthusiasm within Civil Air Patrol for aerospace education, and second, the easy availability to gain access to the tests allows members to channel that enthusiasm in a tangible way. Congratulations to all award winners.

Maj John DiGiantomasso (Master Rating in AE Specialty Track) working with Oka Elementary student.

For those who wish to take the tests, go to: **http://level2.cap.gov/index.cfm?nodeID=5176 and click on paragraph 9!**

REGION TO REGION



NORTHEAST REGION

July 6-11
The Diamond Anniversary of The Ninety-Nines 2004 International Conference will be held in Atlantic City, New Jersey. For more information, go to ***www.ninety-nines.org/conference.html.***

July 16-18
Science: Cosmos in the Classroom 2004, sponsored by the Astronomical Society of the Pacific, for high school and college astronomy teachers, will be held at Tufts University in Boston.
Contact: Andrew Fraknoi, ASP, 390 Ashton Ave., San Francisco, CA 94112.
Fax:(415)337-5205.
E-mail,fraknoi@fhda.edu.
Web site:***www.astrosociety.org/events/cosmos.html.***

MIDDLE EAST REGION

August 18-20
Technology: 2004 Interactive Technologies Conference, sponsored by the Society for Applied Learning Technology, for educators, will be at the Sheraton National Hotel in Arlington, Va.
Contact: Carrie Janssen, LTI, 50 Culpepper St., Warrenton, VA 20186; (540) 347-0055.
Fax: (540) 349-3169.
E-mail: conference_info@lti.org;
Web site: ***www.salt.org***.

GREAT LAKES REGION

July 27 - August 2
Experimental Aircraft Association's 2004 AirVenture will be held in Oshkosh, WI. The theme will be "Launching the Next Century of Flight". For additional information, go to ***http://www.airventure.org/***

August 7-8
Willow Run Airport (YIP) in Belleville, Michigan, will host "Thunder Over Michigan," one of the largest warbird gatherings in North America, from 9 a.m.-5 p.m. Sponsored by Yankee Air Museum. Call (519)-659-3298. Email: walsh@lweb.net or go online at ***www.yankeeairmuseum.org***

August 14
Dr. Haines Airport (HAI) in Three Rivers, Michigan will host the Young Eagles Rally, providing flights for kids. The event will take place from 9 a.m.-4 p.m.and is sponsored by EAA 221.
Call (269)-375-5923.
Email: eaa221ye@triton.net

August 20-21
Oscoda-Wurtsmith Airport in Oscoda, Michigan, will feature the Doolittle Raiders B-25 Commemorative Air Show commemorating the B-25 Tokyo raid. This event is sponsored by Yankee Air Force. Call (989)-362-5740. Email: yafray@yahoo.com

SOUTHEAST REGION

July 12-14
The American Institute of Aeronautics and Astronautics (AIAA) will hold the first "Passport to the Future Educator Workshop" in Ft. Lauderdale at a three-day workshop, co-sponsored by CAP and the Challenger Learning Center for Space Education. For more information go to **www.aiaa.org and click on conferences/workshops.**

NORTH CENTRAL REGION

September 4-5
The Dakota Thunder Airshow will be held at Ellsworth AFB in South Dakota. For more information, go to **http://www.dakotathunder.com/**

SOUTHWEST REGION

July 20-22
Aviation 101 - Ready to Take Flight Workshop for Teachers will be offered at the Frontiers of Flight Museum in Dallas, TX. For more information contact Debra Myers, FAA, at (817)-222-5833.

July 21
Space Center Houston will hold a teacher workshop entitled "Mars Rocks!" for grade levels 5-8. To register please contact Tory Greig, tgreig@spacecenter.org or (281)-244-2145 or visit the website at ***www.spacecenter.org/education.html*** to register online. Payment of $45 is required two weeks prior to the workshop date.

ROCKY MOUNTAIN REGION

July 6-8
Astronomy Teaching Workshop will be held at Montana State University in Bozeman, Montana, from 8am-4pm. This three-day, interactive teaching excellence workshop will focus on dilemmas astronomy teachers face and develop practical solutions for the troubling issues in curriculum, instruction, and assessment. For enrollment information, go to ***http://caperteam.as.arizona.edu/workshops.html.***

July 18-21
Leadership Institute, sponsored by the National Middle School Association, for middle school administrators, will be held in Breckenridge, Colorado. Contact: NMSA, 4151 Executive Parkway, Suite 300, Westerville, OH, 43081.
Phone (800) 528-NMSA.
Fax: (614) 895-4750.
E-mail: info@nmsa.org.
Web site: ***www.nmsa.org.***

(Continued on page 5)

IN THE AEM SPOTLIGHT...Connie Chavez

Connie L. Chavez is employed as a junior high English/history teacher at Sierra Grande School located in Blanca, Colorado. Ms. Chavez is a graduate of Adams State College and has also been teaching aerospace classes for over ten years. Her interest in space education was sparked with the construction of her first Estes model rocket. The excitement of that first launch convinced her aerospace was a terrific means to teach several concepts in history, science, math, and language arts in a challenging and interesting format.

Ms. Chavez has attended several Space Symposiums at the Air Force Academy and Space Foundation workshops in Colorado. In 1996, she was honored with the Lockheed Martin Teacher Excellence Award and earned a trip to Huntsville, Alabama, to attend Space Orientation for Professional Educators. She has attended the NASA Aerospace Education Workshop at Johnson Space Center in Houston, and the National Congress on Aviation and Space Education. The Colorado Air Force Association selected Connie Chavez as Aerospace Teacher of the Year in 2001.

As an elementary teacher, Connie hosted Space Week activities for several years that involved K-8 students in hands-on activities such as visiting space museums and building models of various aircraft. Now as a junior high teacher, she has an actual Aerospace class that she teaches each year. The curriculum includes the history of manned flight in which students have the opportunity to build kites, hot air balloons, model gliders, airplanes, and rockets. Students also learn about living in space and current issues in the space program.

Connie finds that being an Aerospace Education Member in Civil Air Patrol is invaluable because of the number of activities and ideas provided throughout the year in our publications.

Editor's Note: Contributors Needed

The Aerospace Education News is ***your*** newsletter. Please contribute ideas such as lesson plans you have used to inspire and teach aviation and space concepts; good quality pictures of students/cadets involved in aerospace with an AEO or AEM; events, conferences, or workshops in your area (two months in advance); resources you have found useful in your educational setting; and/or a bio and pictures of any outstanding AEM or AEO we might consider for our "spotlights". If you have any other suggestions that would benefit our AEMs and AEOs, we would greatly appreciate your input. If any of your ideas or suggestions are used, we will gladly give you credit.

Rocky Mountain Region

(Continued from page 4)

July 20-21

Principals and Administrators Seminar, sponsored by the Military Child Education Coalition will be held at Antlers Adams Mark Hotel in Colorado Springs, Colorado.
Contact: Shellie Campos, MCEC, 108 East FM 2410, Suite D, Harker Heights, TX 76548
(254) 953-1923; fax: (254) 953-1925
E-mail: Shellie.Campos@MilitaryChild.org
Web site: ***www.MilitaryChild.org.***

July 16-18

PACIFIC REGION

The Fifth Annual Return to the Moon Conference will be held in Las Vegas, Nevada, at the Westin Casuarina Hotel. For more information, go to ***http://www.spacefrontier.org/Projects/Moon/rtm2004.html***

August 13-15

Oregon International Airshow 2004 in Hillsboro will host the U.S. Navy Blue Angels. To find out more, go to ***www.oregonairshow.com/***

CAPPY'S QUIZ

In 1972, the last man to step on the moon was astronaut_____.
A. Buzz Aldrin
B. Gene Cernan
C. Alan Sheppard
D. James Irwin (Answer page 6)

AEO SPOTLIGHT....

LT COL A. PETER FELTZ and LT COL WILLIAM H. TURNER

Lt. Col. A. Peter Feltz joined Civil Air Patrol in 1987 in Phoenix, Arizona. His current positions are the Arizona Wing Deputy Chief of Staff for Mission Support and Deputy Director of Aerospace Education. He has held a variety of positions since joining CAP including: Deer Valley Squadron 302 Communications Officer and Squadron Commander; Group III Commander; Arizona Wing Chief of Staff; Arizona Wing Vice Commander, Director of Operations and Plans & Programs Officer. He has a Private Pilot's license with 1250 hours as a CAP Senior Pilot. He

is a CAP Mission Pilot and Cadet Orientation Pilot. He has been a staff member for NCASE as the Living History Video Interviewer for five years. He has also been a staff member in various positions over the past several years at Southwest Regional Staff College at Kirtland AFB. Pete has also achieved many accomplishments while in CAP including: CAP Yeager, Loening, Garber, and Wilson Awards; eight Commanders Commendations; two Exceptional Service Awards; Group Commander of the Year Award; Arizona Wing ACE Award; Hall of Honor; and the A. Scott Crossfield award. Pete has supported the aerospace education mission with a smile and a "can do" attitude. We are truly lucky to have such a wonderful example of the volunteer spirit in CAP.

Lt. Col. William H. Turner is the Arizona Wing Director of Aerospace Education. He has held this position since 1996. He originally joined Civil Air Patrol in 1981 in California and moved to Arizona in 1988. He has been involved with Aerospace Education from the time he joined in Upland, California at the Cable Airport Squadron 25. He also was a Mission Pilot and Cadet Orientation Pilot flying his own Piper Tomahawk Airplane. Since arriving in Arizona, he has held a number of aerospace positions at the Squadron and Group levels before attaining his current position. One of his biggest accomplishments as the DAE for Arizona is setting up an aerospace exhibit in a 24-foot trailer. This exhibit travels to various air shows and conferences throughout the state of Arizona and even was exhibited at the Southwest Region Conference in Albuquerque, New Mexico in 2002. He has also been on the NCASE staff for the last several years as a photographer. Under his direction, the Arizona Wing has received the National Outstanding AE Award and two Southwest Region Outstanding AE Awards. His other CAP accomplishments are: Senior Pilot; Gen. Chuck Yeager Award; A. Scott Crossfield Award; Exceptional Service Award; Commanders Commendation; Paul Garber Award; Grover Loening Award; 1997 Frank G. Brewer- Civil Air Patrol Memorial Aerospace Award.

Bill is "one of the best" when it comes to Civil Air Patrol and Aerospace Education. We thank him and hope he will continue to provide his great leadership and inspiration to others for many years in the future.

Cappy's Quiz answer:
B. Gene Cernan

CURRICULUM CORNER

MOON PHASE BOX

Go to: **http:// www.fi.edu/pieces/schutte/MoonBox.html** for more information.

Objective:
Students will learn the phases of the moon.

Grade levels:
K-5

National Science Standards:
- *Content Standard D: Earth and Space Science*
  - Objects in the Sky
- *Unifying Concepts and Processes*
  - Evidence, models, and explanation

Materials:
Copier paper box, black spray paint or black paper to line box, flashlight, scissors, golf ball, hot glue gun, fishing line

Procedure:
1. Cover or spray the inside of a copier box black, including the lid.
2. Cut a circle opening in one end about the size for the flashlight to fit.
3. On the opposite side cut another window that can open and close. Make it about 1.5 inches.
4. Get a golf ball and hot glue a fishing line to it. Push the fishing line through the center of the top of the box. Suspend the golf ball from the fishing line.
5. Put the lid on the box. Put the flashlight inside the circle you made at the end of the box. Turn the flashlight on. Open the window flap you made on the opposite side. Move the golf ball up and down until the golf ball blocks out the light from the flashlight. The New Moon phase is when you can't see the moon in the sky because the Earth is blocking out the sunlight. You may see a dim circle in the sky.
6. Tape the fishing line so that it cannot move. Cut three windows, with flaps to open and close, on the long side of the box. Make sure the flaps are closed when you are looking in each window. The box should stay as dark as possible.
7. Do the same thing to the opposite side of the box. As you open each window and look in you will see each phase of the moon.

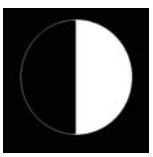
Background Information:


New Moon

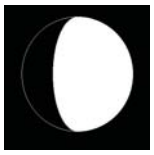
New Moon - The Moon's unilluminated side is facing the Earth. The Moon is not visible (except during a solar eclipse).


Waxing Crescent

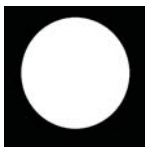
Waxing Crescent - The Moon appears to be partly but less than one-half illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.


First Quarter

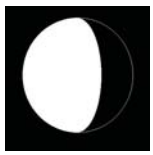
First Quarter - One-half of the Moon appears to be illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.


Waxing Gibbous

Waxing Gibbous - The Moon appears to be more than one-half, but not fully illuminated, by direct sunlight. The fraction of the Moon's disk that is illuminated is increasing.


Full Moon

Full Moon - The Moon's illuminated side is facing the Earth. The Moon appears to be completely illuminated by direct sunlight.


Waning Gibbous

Waning Gibbous - The Moon appears to be more than one-half, but not fully illuminated, by direct sunlight. The fraction of the Moon's disk that is illuminated is decreasing.


Last Quarter

Last Quarter- One-half of the Moon appears to be illuminated by direct sunlight. The fraction of the Moon's disk that is illuminated is decreasing.


Waning Crescent

Waning Crescent - The Moon appears to be partly, but less than one-half, sunlight. The fraction of the Moon's disk that is illuminated is decreasing.

* Note: To see the full moon, make a flap in the flashlight end of the box.

Assessment:
Give students cutouts and labels for each of the phases and ask them to match them and tell why the moon appears to have various shapes.

MAKING MOON IMPACT CRATERS

Objective:
Students will be able to observe, measure, and record data concerning the crater experiment.

Grade level: K-3

National Science Standards:
- *Content Standard A: Science as Inquiry*
  - Abilities necessary to do scientific inquiry
  - Understanding about scientific inquiry
- *Content Standard D: Earth and Space Science*
  - Objects in the sky

Materials:
Newspaper to cover floor, aluminum cake pans, sand, marbles of various sizes, meter stick, and smaller rulers for measuring size of craters, student record sheet, pencil

Background Information:
The moon's surface is covered with round pits called craters. Impact craters are caused by a rock from space (called a meteor) falling toward a planet or moon. Also, the Earth has many craters, but we do not see them because rain and wind has eroded away the evidence of most of them. The Earth's atmosphere prevents small meteors from reaching the surface, because when a meteor falls toward a planet with an atmosphere, it "rubs" against air causing friction. Friction produces heat and the meteor burns up before hitting the Earth's surface - that doesn't happen on the Moon, because the Moon has no air to rub against, which is one reason why the Moon has lots of craters.

Procedure:
1. Set up the crater materials for groups of 4 students . Lay the newspaper out on the floor and put a 2-cm thick layer of sand in a cake pan and set it on top of the newspaper.
2. Have large and small marbles in a container next to the pan.
3. Have a meter stick and smaller rulers ready to use.
4. Tell each group to take a small marble and drop (not throw) it into the sand from a height of 25 cm, 50 cm, 75 cm, and 1 meter and after each drop to record the width of the resulting crater. **SAFETY: Goggles should be worn to prevent sand from getting in eyes.** Make sure the sand is smoothed out before each drop.
5. Try the same distances with a large marble (as in number 4). Record the results.
6. Have the students compare the results and come to a conclusion about the size and shape of the craters they created.

Suggestions:
- Have the groups decide before they begin how they will take turns dropping the marbles.
- Have students predict what will happen before they conduct the experiment.
- Show pictures of the moon and its craters.

Follow-up and assessment:
Ask the students these questions:
1. What does the size of the marble have to do with the size of the crater produced? (The larger the marble, the larger the crater.)
2. How are craters formed?
3. What are the variables (things that would make a difference as to the size or shape of the crater) in this experiment? (Size of object, distance dropped, angle dropped, and velocity dropped.)

Rubric Guidelines for Assessment:
**** Excellent:** Student has collected and recorded accurate, complete data from the experiment and has answered the follow-up questions demonstrating knowledge of the scientific method.
*** Good:** Student has collected and recorded mostly accurate/complete data and has answered questions 1 and 2 satisfactorily.
- Repeat activity: Student has collected data but has not understood the actitity or the results.

Student Record Sheet

	Small marble crater width	Large marble crater width
25 cm drop		
50 cm drop		
75 cm drop		
1 meter drop		